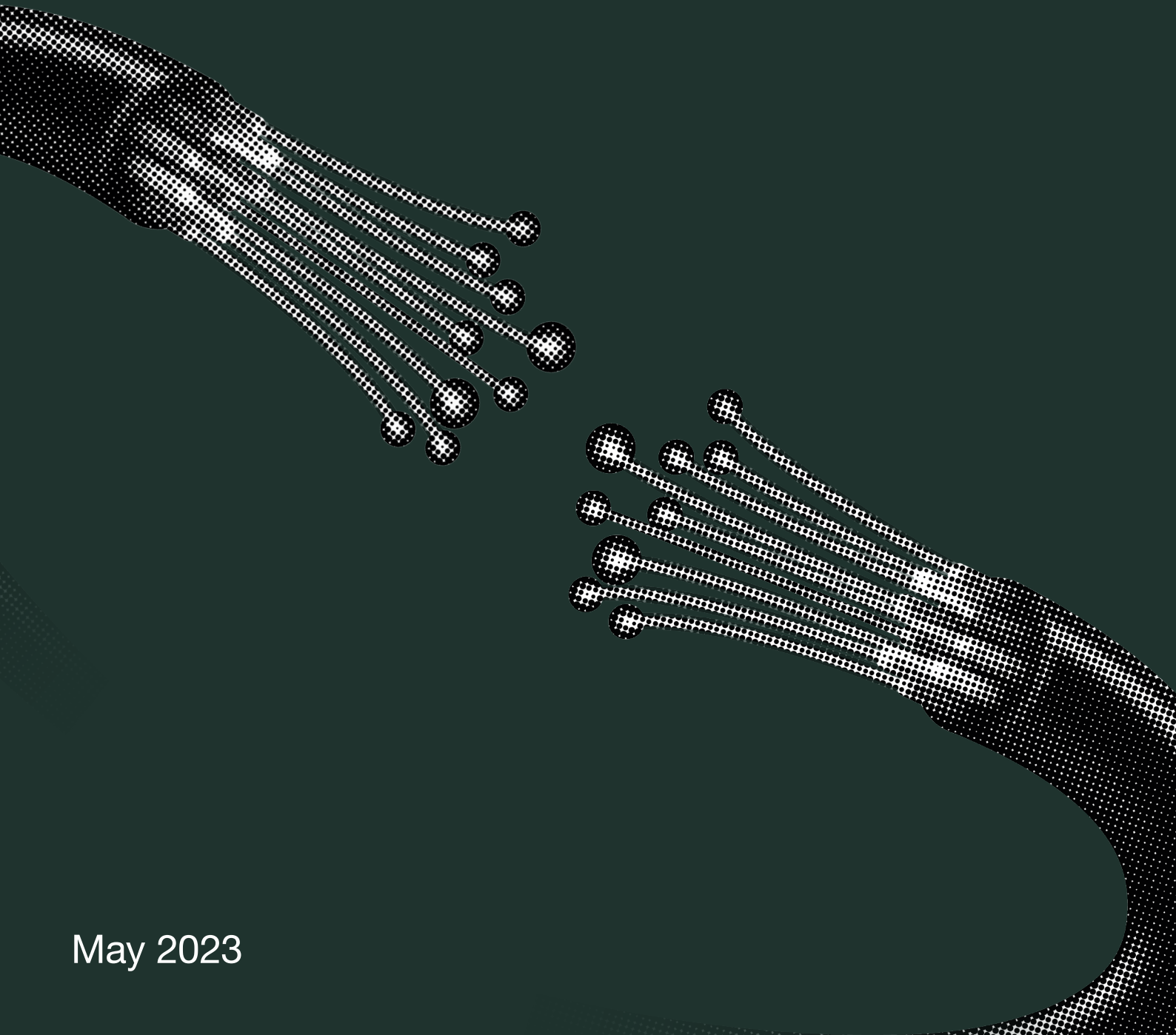

A report for Virgin Media O2

Creating the Conditions for Scaled Connectivity Challengers



May 2023

About Assembly

Assembly provides independent custom and subscription-based information, analysis and opinion on regulatory, policy and legislative developments that affect communications markets and the wider digital economy.

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About this study

Virgin Media O2 commissioned Assembly to produce an independent report that looks at the economic, societal and competition benefits gained from having more than one scaled gigabit-capable fixed network (based on any technology), and the environment and conditions needed for scaled network competition to occur.

Research correct as of Q1 2023.

Creating the Conditions for Scaled Connectivity Challengers

Across Europe, operators are undertaking ambitious gigabit-capable network builds, replacing ageing copper with fit-for-purpose digital infrastructure. The role of policymakers in incentivising investment and developing a rich and competitive landscape is clear, helping to usher in benefits for consumers and businesses

- Policymakers create the environment for a diverse gigabit landscape to emerge. Alongside a well-defined national broadband plan, regulation can help drive the migration from copper. Measures often include an effective physical infrastructure access regime and the support for co-investment models.
- Investments in gigabit-capable networks are being made by a range of operators, with this resulting competition driving a surge in fixed infrastructure capex. Former incumbents have not always spearheaded the shift to fibre. Where it was incumbent-led, the presence of scaled connectivity challengers has required it to maintain a consistent pace of rollout and/or to ramp up investment.
- A rich fibre build is enabling competition at the retail and wholesale levels, with gigabit connectivity becoming a standard proposition across the countries studied and a key battleground in some. As demand for faster speeds and lower latency increases, fibre is cementing its position as the leading broadband technology.
- Adoption of fibre is rising in parallel to increases in download speeds and fixed data consumption. With standalone broadband prices falling overall, consumers are now paying less per GB of traffic or per Mbps of throughput, and enjoying better value for money.
- The race to deploy has seen rural fibre coverage grow considerably, helping to reduce the digital divide. Operators' commercial builds have underpinned much of the progress, with co-investment and wholesale-only providers also contributing to furthering network expansion.

A competitive broadband build to help secure the UK's digital future

When recently announcing that full fibre had reached half of UK homes and that gigabit-capable coverage had hit 70%, Ofcom reiterated that competition drives better broadband and that alternative networks to Openreach provide a vital part of its strategy for better broadband – “they help form the engine room of the UK's digital infrastructure.” This commitment to a competitive fibre build follows the Government setting a strategic priority for Ofcom in 2019 to set out a framework of “stable and long-term regulation that encourages network investment.” It came about as a result of the 2018 Future Telecoms Infrastructure Review (FTIR) which relied on getting right the market entry and expansion by alternative network operators. The FTIR recognised that competition between rival networks is best placed to deliver the Government's objectives of extending full fibre. It pointed to Spain, Portugal and France as examples of countries where infrastructure competition had led to higher levels of fibre coverage.

Policymakers can provide the incentives and confidence that unlocks investment

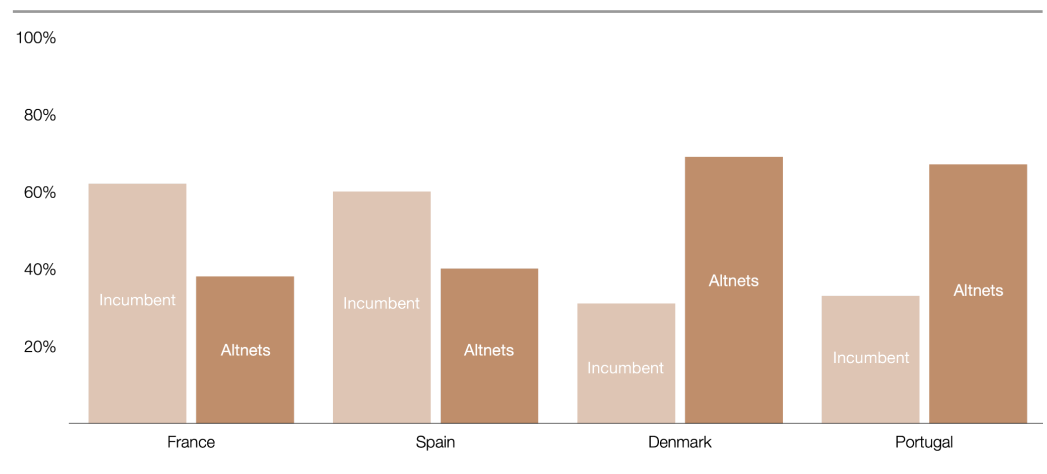
Governments and regulators have a critical role to play in creating the conditions necessary to enable a competitive fibre build and, in turn, the widespread availability of high-speed broadband. Studying five European markets uncovers a number of policy levers which can be pulled to facilitate infrastructure deployments and give altnets the confidence to invest. For instance, a well-defined and targeted national broadband plan can help focus the industry's minds and efforts through clear coverage targets – in some cases stating the technology that should be deployed.

In parallel, it is vital that policymakers seek to implement and maintain a pro-investment framework to drive the migration from copper, while supporting the broader economy's digital transformation. In France, Arcep has defined regulation to encourage operators to share the investment burden, particularly in those areas not reached by the incumbent. This approach should also include a well-functioning physical infrastructure access regime. The availability of ducts and in-building fibre played an important role in triggering fibre rollouts in Portugal and Spain, particularly by allowing telcos to quickly and efficiently connect users in multi-dwelling units. In addition, co-investment agreements can lower barriers to deployments (such as cost and risk), while public funds (e.g. Denmark's National Broadband Pool), while ensuring there is no distortion of competition, can support the deployment of fibre in uneconomical, less densely populated areas.

Altnets have often been the catalyst for fibre deployments

Significant investments in fibre have been – and are being – made by a range of operators. In the countries we’ve studied, annual fixed network capex has surged, driven by infrastructure-based competition (whether that’s fibre, cable or DSL). Between 2017-2021, Portugal and Spain have seen increases in annual telecoms sector investment equivalent to 35% and 44%, respectively. As a result, on average, FTTH is now accessible to a strong majority of households. In Denmark and Portugal, altnets’ combined fibre deployments (i.e. the number of new premises connected each year) is outstripping the incumbent’s own build programme.

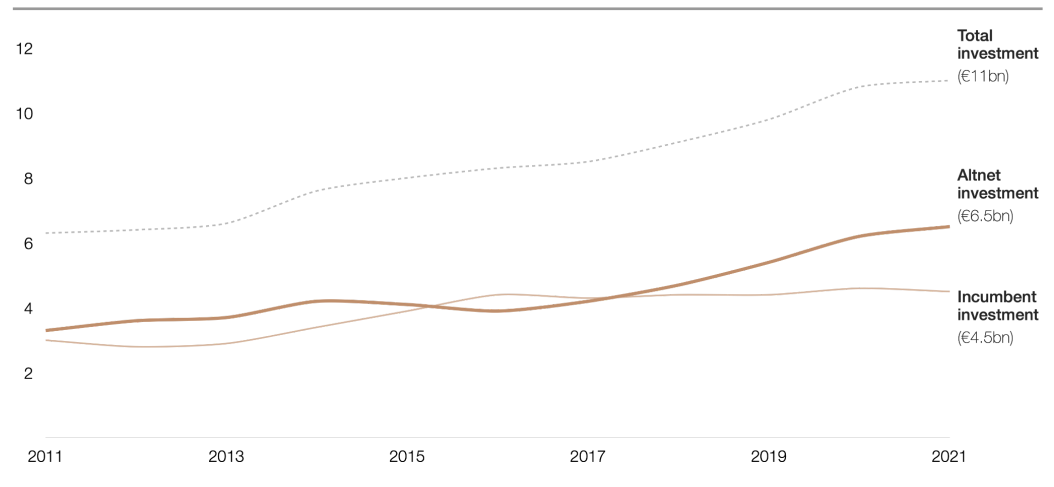
Figure 1
The current pace of fibre rollouts
Share of new annual deployments (%)



Source: Assembly, operators, regulators

This achievement has been possible due to the cultivation of a diverse gigabit landscape, in which the former incumbents have not always spearheaded a country’s shift to fibre. In Denmark, for instance, this journey was initiated by the rollouts of regional utilities firms, which have begun to provide access to their networks that stimulates competition downstream. Where a country’s fibre build has been incumbent-led (e.g. France), the presence and plans of scaled connectivity challengers have required it to maintain a consistent pace of rollout and/or to ramp up investment. Germany provides for an interesting contrast, with altnets responsible for much of the growth in fixed network capex. Incumbent Deutsche Telekom only recently made the decision to pivot away from upgrading copper to deploying fibre – a move arguably sparked in part by the ambitions and actions of competitors.

Figure 2
Fixed network investment in Germany, 2011-2021
€bn



Source: Assembly, BNetzA

Competition among, and demand for, gigabit networks is rising

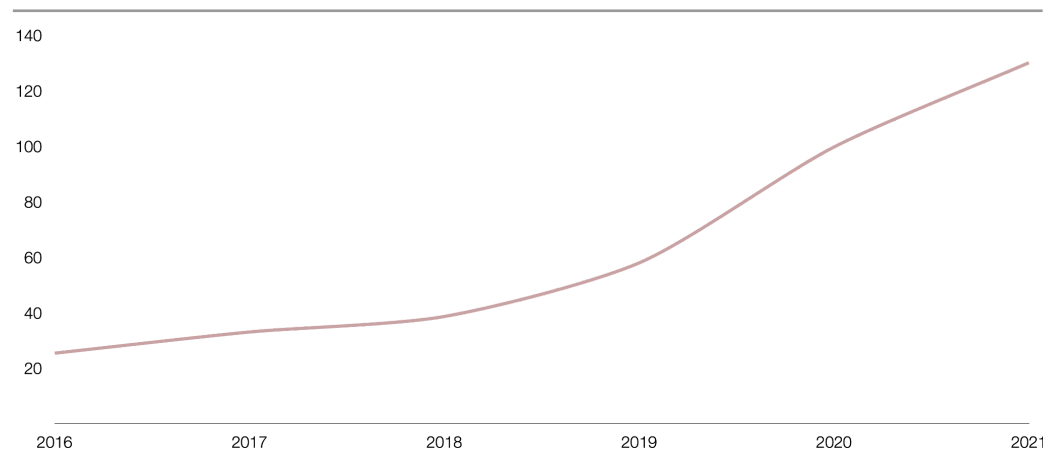
Amid continued infrastructure investment, most operators now offer high-capacity services to customers at the retail level, with 1Gbps+ services becoming a staple in the countries studied. In Spain, gigabit-capable broadband has become a focal point of competition, seeing substantial price discounting as operators compete for consumers. Meanwhile, in France, two leading altnets – Free and SFR – have brought some of the fastest speeds (i.e. up to 8Gbps) to the market. The deployment of more than one scaled fibre network can also stimulate competition at the wholesale level, which some operators (e.g. Bouygues in France) are looking to become active in and can enable others to expand their retail offerings from both a geographic and product perspective.

Demand for premium speeds is rising, with fibre becoming the leading fixed broadband technology in some markets. FTTH has been the main form of internet access in Portugal since early 2017; however, where fibre deployments are more limited (Germany), DSL can still dominate. The increasing take-up of high-speed broadband services is filtering through to download speeds. On average, speeds in the study countries have grown more than 450% over the 2017-2021 period, with relatively greater increases in those markets where fibre coverage and adoption (as a percentage of total subscriptions) are higher.

Figure 3

Average download speeds, 2016-2021

Mbps



Source: Assembly, Cable/M-Lab, SDFI

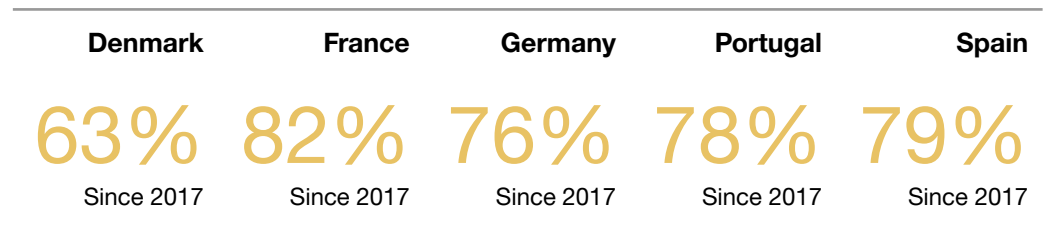
Consumers are enjoying better value for money than ever before

With the expanding coverage of competing fibre networks, an increasing proportion of consumers have upgraded their broadband service, often transitioning from the incumbent's legacy copper infrastructure. While the annual growth in FTTH adoption in Spain has softened as the take-up rate approaches 90%, fibre remains the main driver of new broadband connections.

Adoption of fibre is rising as countries also see an increase in monthly fixed data traffic. For those analysed in this report, consumption has been growing strongly for several years due to the popularity of new digital services, such as streaming and social media applications, and greater intensity of internet use across the subscriber base. Demand surged following the outbreak of COVID-19, with networks relied upon perhaps more so than ever before. In some cases, e.g. Denmark and Germany, the heightened pace of growth in usage largely persisted through 2021 even after restrictions came to an end.

At the same time, average prices for standalone fixed broadband above 30Mbps have fallen, which when considered relative to data consumption, demonstrates that consumers are paying less per GB of traffic. When those same prices are considered in the context of download speeds, consumers are getting a better deal today than ever before as a result of operators' investments to deliver faster (and more reliable) services.

Figure 4
Improvement in fixed broadband value

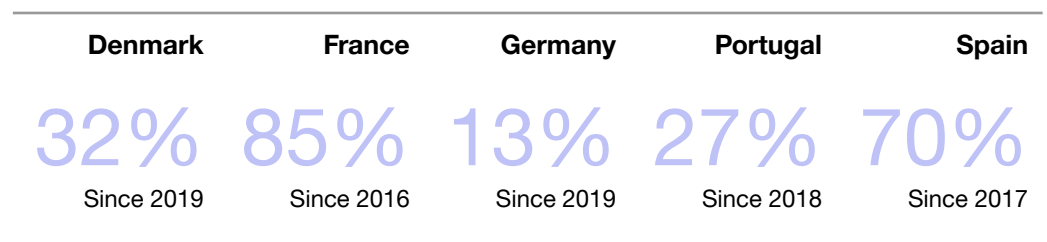


Source: Assembly

Competitive fibre rollouts are supporting efforts to close the digital divide

In rural areas, while DSL is often the most widely available technology, the availability of fibre has increased significantly – and continues to grow at pace. In the study countries, the digital divide between areas with gigabit-capable networks has been reduced on average by 26% since 2019. Operators’ individual commercial builds have been responsible for much of this progress, with wholesale-only providers, partnerships between operators and joint ventures between operators and investors (e.g. Iliad/InfraVia in France) becoming more common and contributing to furthering network expansion.

Figure 5
Reduction in the size of the digital divide



Source: Assembly

In some counties (such as Denmark), the presence of multiple network builders means that rural fibre coverage is now slightly above that in urban areas. More broadly, operators are increasingly focusing their rollouts in less densely populated areas, leveraging government support where market economics do not work.

Beyond the deployment of infrastructure, altnets are having positive socioeconomic impacts, in particular by promoting digital inclusion and skills, and by taking steps to reduce carbon emissions within their businesses and from across their supply chains.

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Assembly

36 Spital Square
London
E1 6DY
United Kingdom

+44 20 3026 2700
info@assemblyresearch.co.uk